

OPTICAL SORTERS

CUSTOMIZED SOLUTIONS &
INNOVATIVE PROJECT



For quality lovers only.

X-Tri



Roll Feeder

Sistema di alimentazione e sgrondatura.



Selezionatrice ottica a getto d'aria per uva da vinificazione.



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ELECTRONIC INSPECTION SYSTEMS AND MACHINES FOR THE FOOD INDUSTRY
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Reg.Impr. di PR n° 01741510349 • Cod. Esp. M PR 011850

Unique quality in the world



Technical description

INTRODUCTION

The sorter can carry out, by means of a vision system, the sorting of defects in red and white grapes.

The vision system inspects the product on the conveyor belt, enlighten by a powerful lighting system, then if defective is rejected by a powerful air blast. The system allows the installation of several cameras to detect rotten grapes, foreign bodies, green parts (leaves), stems and other.

All the electrical components and panels are cooled by an air conditioned system to guarantee high durability and the best performances in the worst working conditions

THE VISION SYSTEM

The sorter works by means of a line-scan high speed camera system, high resolution, which inspects the product conveyed on the belt.

The image analysis is carried out with an electronic board that exploits the newest technologies of integration and speed, that has been designed by Protec to guarantee the best performances. Combined with a powerful software for image elaboration it can detect defects as small as 1 x 1 mm.

The sorter can be equipped with several cameras:

- first camera for foreign bodies removal
- second camera for green parts
- third camera for the color detection and rotten.

The product is illuminated by LEDs (Light Emitting Diode), whose fundamental characteristics are: high efficiency, depth product penetration, light diffusion in the product and the long life.

Depending on the product and on the sorting the machine can be equipped with a back light and infrared light for NIR analysis.

By means of a powerful software the product is surveyed at a very high speed, thanks to the use of microprocessor, Digital Signal Processor (DSP) and Programmable Gate Array (FPGA).



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The use of surface-mounted technology (SMT) allows the presence of a high number of electrical components in small spaces and higher reliability of the circuits and components.

THE CONVEYING BELT

The conveying belt permits an easy maintenance and a quick replacement, reducing to a minimum the number of parts needing disassembly.

To guarantee the best selection the product must be evenly spread on the belt, therefore we suggest to use a dedicated system that permits an excellent feeding product distribution.

THE EJECTION SYSTEM

The product which is identified as no-good is ejected by a system of high-speed air blasts.

The number of ejectors in the X-TRI 150 is 192 and they are 8 mm spaced.

The smart software can control the number of the ejectors working for each defect.

In such way it is possible to use more than one ejector active for defects that are bigger than the ejector's pitch.



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SUPERVISION AND MAN-MACHINE INTERFACE

The sorter is equipped with a supervision Personal Computer with touch screen interface. By the user-friendly software installed all the functions can be monitored by the maintenance people: settings, reject level, air pressure, alarms, water temperature, motors activation, timings and belt speed. Everything can take place either automatically or manually. The critical system functions are password-protected to prevent unwanted interference.

CONNECTIVITY

It is possible to attach to a local area network (LAN) in order to connect to industrial control system or operator controls panels. The machine was conceived with the capability of having on board software and a modem for remote help and diagnostics, in order to be able to check the functioning of the equipment from an off-site location using a dialup connection.

SORTING CAPABILITY.

The optical sorter can detect green or red or white berries, foreign materials, as insects or leaves. The optical sorter should be fed by a spreading system to make a single layer of product. The Roll Feeder is a high recommended feeding system that during feeding grades and cleans the product from small pieces.



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TECHNICAL DATA

Production Data

PRODUCTION CHARACTERISTICS

Capacity

*

15 T /h

Sorting Efficiency for grape fruits

| | |
|---|------|
| Discoloration, white, green, | 90 % |
| Rose | 85 % |
| Foreign materials (wood, plastic, small stones, stems, insects, snails, etc.) | 85 % |

Machine characteristic

Vision System

Vision unit

4 Line scan cameras

Camera # 1 On Belt detection

Infrared (for foreign bodies)

Vision field

1500mm.

Optical resolution

0,5 mm

Illumination

By infrared light

Camera # 2 On belt detection

Red light (for Chlorophyll detection)

Vision field

1500 mm.

Optical resolution

0,5 mm

Illumination

By red LED light,

Option: not included in the offer

Camera # 3 On flight detection

By White light (for rotten berries 80%) (white grapes)

Vision field

1500 mm.

Optical resolution

0,5 mm

Illumination

By white LED light,

Other Characteristics

Minimum detectable defect

0,5 mm

Image digitations

16 bit



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Frame Grabber

By Protec

Supervision and Man-Machine Interface

Operating system

Windows 10

Supervision

Industrial PC

Display

15" LCD Color, IP 65

Touch screen

Resistive type, IP 65

Ejection

Number of ejectors

192 spaced 8 mms

Pressure of exercise

6 bar typical (2 ÷ 8)

Max number of ejection per valve

200 per sec

Air consumption***

200 (typ.) ÷ 1000 NI / min ***

Max number of ejection per valve

200 per sec

*** these value vary with defects number

Conveying Belt

Conveyor Belt

Food polyurethane

Speed

1 ÷ 3 m/s adjustable,

Regulation

By variable frequency driver

Motor

1.5 kW

Dimensions

Dimensions

3790 (length) x 2210 (width) x 2990 (h) mm

Electrical characteristics

Voltage

380/480V 50/60Hz, 3F + T

Absorbed electric power

6 kW max

Electrical control panels protection

IP 65



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ROLL FEEDER 150

Technical description

N° 1 Roll Feeder 150 with 14 rolls complete with:

- N° 1 Kit Inverter
- N° 14 special rolls in stainless steel
- N° 2 stainless steel hoppers for reject collection
- N° 1 hopper for under size collection in the second section
- N° 1 system for hand setting of rolls
- Outer greasers

Description :

Our conveying system Roll-Feeder enables a perfect feeding to the sorting equipment.

It consists of two sets of special stainless steel rolls. Such rolls are of special design and enable an even distribution of the product for all the rolls length, and a layer of constant density, the elimination of water excess from the product and also rotten, broken berries, seeds, leaves, stones, stems.

The distribution of product is important to minimize the errors in the sorting, both manual and automatic, and in case of electronic sorting, it can lower remarkably the presence of the good in the rejects.

The distance between the rolls can be hand set, to obtain the desired calibration of the product to be sorted.



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Technical characteristics:

- Maximum production capacity : **15 T/h**
- Separation efficiency : 90%
- Rotation speed : adjustable with inverter
- Rolls distance : from 4 to 9 mm adjustable
- Voltage (3F+T) : 400V
- Electrical power : 1.5 kW
- Electrical protection degree : IP65 (EN 60529)
- Motor Electrical protection degree : IP55 (motor only)
- Frame : Stainless Steel AISI304
- Size : 1900 (l) x 1900 (w) x 1825 (h) mm

Technical Documentation as per CE rules.



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